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Research Article

Growth and yield performance of lettuce (*Lactuca Sativa L.*) fertilized with varying levels of compost

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ABSTRACT

This study was conducted to determine the growth and yield performance of lettuce (*Lactuca sativa L.*) with varying levels of compost. This was conducted inside the campus of Tacloban National Agricultural School, Basper, Tacloban City. A Randomized Complete Block Design (RCBD) for a single factor experiment with six (6) treatments and three (3) replications were set in this study. These are as follows: T0 (complete check), T1 (100% chicken manure) T2 (75% chicken manure and 25% compost), T3 (50% chicken manure and 50% compost), T4 (25% chicken manure and 75% compost) and T5 (100% compost). Results showed that significant deviations in the plant height of lettuce was significantly affected at 10, 20 and 30 days from transplanting. On the other hand, significant differences were noted on the width of leaves as well as length of leaves after 20 and 30 days from transplanting. Further, a significant difference in the number of leaves was detected only after 30 days from transplanting. Yield was significantly affected due to variations in the amount of chicken manure and compost. It is interesting to note that yield of lettuce with 100% compost was comparable to the plots receiving 100% chicken manure.

Keywords: lettuce; growth and yield; randomized complete; block design

1. INTRODUCTION

Lettuce plant scientifically known as *Lactuca sativa L.* and is commonly known as lechugas is a native to Southern Europe and Western Asia. In the Philippines, lettuce is considered as one of the most important salad crops and a fast-food item for being used as garnishing for other food preparations (Poliquit, 2019). As such, it is one of the groups of leafy vegetables that could be grown by farmers and generate more profit. Further, the prospect of increasing market absorption on lettuce commodities is evident due to increasing population, level of community education, income and welfare of society, and public's preference for this commodity (Samadi, 2014 as cited by Mujiono, Suyono, and Purwanto, 2017).

The fact that lettuce is rich in various vitamins and minerals, it has several benefits such as anti-inflammatory properties, low cholesterol level, antioxidant properties, reduce insomnia, antioxidant, antimicrobial, anti-cancer properties and control anxiety. It is rich in calcium, potassium, vitamin B-complex, C and K, thiamine, riboflavin and folate (Yap and Teo, 2019). As a results, many commercial growers produce lettuce like gourmet 's farm because it is still one of the most demanded salad kits for healthier lifestyle, most especially, when it is grown organically. Organic production of lettuce for salad is deemed important as it is eaten raw. However, despite of its market potential and health benefits, it was noted that the supply of lettuce in the locality is very limited. In Samar region, production of lettuce is just limited because of its fragile weather condition that affects the growth performance of lettuce (Poliquit, Sabijon, Perocho, and Mante, 2019). Perhaps, with proper timing of planting and with appropriate fertilizer management, this could be a productive endeavor.

Studies showed that lettuce can be successfully grown organically. This was confirmed by Cabilovski, Bogdanovic, Manojlović and Rodic, 2011 in the paper of Poliquit (2019) that using Farm Yard Manure (bat, goat and cattle manure) could yield the highest profit. Further, Slamet (2017) found out that applying guano fertilizer provided the most excellent effect on the Leaf Area Index (LAI) and biomass of lettuce. It has only slight difference in yield as compared to commercial fertilizer (125 g per plant).

In recent year, ESSU-Salcedo campus has produced an organic fertilizer that could be used for lettuce production. Such compost was produced from 25% carbonized rice hull, 25% coconut coir dust and 50% chicken manure. Results of laboratory analysis as reported by Padullo (2017) showed that it has a pH of 6.8, total Nitrogen of 2.335, Phosphorus of 2.397, Potassium of 1.138, Calcium of 16.343 and Magnesium of 1.1928. This fertilizer material was tried in lettuce production in the locality particularly in Tacloban City, Leyte. Such experimentation could be the best approach to document the effectiveness of this locally made fertilizer against commercial fertilizers especially with regards to the prevailing soil and climatic conditions of the locality.

2. LITERATURE REVIEW

Lettuce is able to grown on different types of soil, from light sand to heavy clay soils. A loam-to-clay loam textured soil is considered as the best soil for lettuce production. Good drainage should be ensured when growing lettuce. Preferably the soil pH should be between 5.5 and 7 for optimum growth. Also, ideally lettuce should be grown on soils with a high-water holding capacity and adequate drainage, for proper root growth and plant performance (Agriculture, Forestry and Fisheries, n.d). The optimum temperature range for excellent growth and good quality of lettuce is 15-25^{o}C and temperature above 25^{o}C accelerates seed stalk and reduces the quality of leaves and may impact the plant's head development, reduce the edible quality of the plant, and generally encourage premature seed stalk development. Also, the high temperatures can cause a high rate of tip burn (Agius, 2015). It is evident that high air temperature causes high soil temperature, which retards root growth and affects the uptake of water and nutrients and photosynthesis that consequently results in stunted plant growth and mortality (Firoz, et.al., 2000).

Chicken manure for vegetable garden is excellent, but there are some things one should know about in order to use it correctly. Chicken manure fertilizer is high in nitrogen and also contains a good amount of potassium and phosphorus. The high nitrogen and balance nutrients are the reason that chicken manure compost is the best kind of manure to use. Chicken manure composting gives the manure time to break down some of the more powerful nutrients so that they are a more usable by the plants and chicken manure mellows the nitrogen and makes the manure suitable for the garden (Rhoades, 2018). Although chicken manure is relatively cheaper material that the organic vegetable growers can obtain, sometimes its availability in the locality is a problem. The use of other forms of organic fertilizers has been found to provide the needed nutrient requirements of the plants aside from improving soil structure and microbial biomass which may lead to increase agriculture outputs (Sarker, Kashem, & Osman, 2012). The use of organic fertilizers decreased the potential acidity from 15.2 to 16.7% indicating that organic fertilizer promoted the increase of losses in soil exchange complex. Heavy metals (Cd and Pb) were decreased with the increase of organic fertilizer doses. Organic fertilizer at the rate of 26 tons/hectare) helped to reduced heavy metal contents in soil except Zinc (Hossain and Ryu, 2018).

Conceptual Framework

This study made use of the input-process-output model stated as Figure 1 below. In this research, the inputs include the treatments which served as the independent variables of this investigation. These include the following: T0= complete check (no fertilizer applied), T1=100% chicken manure, T2=75% chicken manure and 25% compost, T3=50% chicken manure and 50% compost, T4=25% chicken manure and 75% compost, T5=100% compost. This was conducted in Tacloban National Agricultural School, Tacloban City, Leyte. The effect of variation of the independent variables, which is varying levels of compost was evaluated using the following growth and yield parameters. Growth includes: plant height, width of leaves, length of leaves and number of leaves. Yield parameter was measured in terms of the weight of lettuce plants. Data collected using tally sheet was summarized in order to determine the arithmetic mean in each treatment. Such data was subjected to analysis of variance (ANOVA) and Least Significant Difference (LSD) to facilitate the interpretation of findings and in the formulation of conclusions and recommendations.

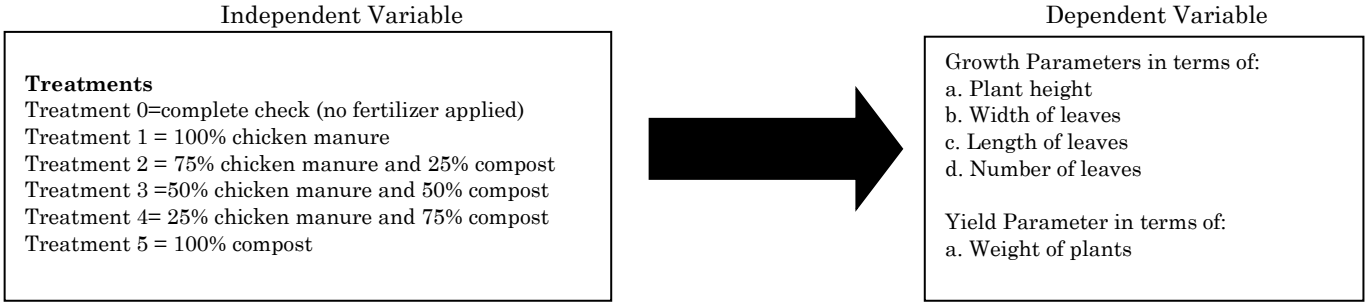

Figure 1. The Conceptual Framework of the Study

Statement of the Problems

This study determined the effects of the different levels of compost on the growth and yield performance of lettuce under Tacloban City condition. Specifically, this was conducted to answer the following questions:

1. What is the growth of lettuce fertilized with varying levels of compost in terms of:
   1) Plant height;
   2) Width of leaves;
   3) Length of leaves;
   4) Number of leaves?
2. What is the yield of lettuce fertilized with varying levels of compost as indicated by the weight of the plants?
3. Is there a significant difference in the growth of lettuce due to varying levels of compost?
4. Is there significant difference in the yield of lettuce due to varying levels of compost?

Scope and Delimitation of the Study

The field experiment was conducted at Tacloban National Agricultural School, located at Barangay Basper, Tacloban City with clay loam type of soil. This was undertaken from May 2022 to June 2022.The research was focused primarily on discovering the growth and yield of lettuce when the levels of locally organic fertilizer (compost) is diversified. This was limited to five (5) treatments with three (3) replications. The study dealt with the following independent variables. T0=complete check (no fertilizer applied), T1=100% chicken manure, T2=75% chicken manure and 25% compost, T3=50% chicken manure and 50% compost, T4=25% chicken manure and 75% compost, T5=100% compost. The effects of varying amount of compost were determined by measuring the growth and yield in each treatment. This was limited to the following parameters: Growth parameters which includes plant height, width of leaves, length of leaves and number of leaves and yield parameters in terms of the weight of lettuce plants.

3. MATERIAL AND METHOD

This chapter presents and discusses the materials needed in the study, the different methods employed and the cultural management practices in the conduct of the study.

Materials

The following materials were needed in this experiment.

1) **Lettuce.** (*Lactuca sativa L.*) is an annual plant of the family Asteraceae. It is most often grown as a leaf vegetable, but sometimes for its stem and seeds. Seeds of this variety were procured from Pacifica Agrivet-Supply, Tacloban City.
2) **Fertilizer**. The compost was procured from the Research Center of Eastern Samar State University-Salcedo campus. On the other hand, the chicken manure was purchased from nearby poultry farm in Tacloban City.
3) **Meterstick**. This was used to lay out the experimental site as well as to obtain precise measurement of the different experimental plots.
4) **Ruler**. This was used to approximately measure the planting distance between plants. Likewise, this was used to determine the length and width of the leaves of the test plants.
5) **Shovel**. This was used in preparing the experimental plots prior to transplanting.
6) **Dull bolo**. This was used to remove weeds and clean the experimental area.
7) **Sprinkler**. This was used to water the lettuce plants.
8) **Weighing scales**. A digital weighing scale was used to measure the amount of organic fertilizer to be applied to each
9) **Plant**. This was also utilized in determining the weight of the plants upon harvesting.
10) **Seedling tray**. This was used in sowing the seeds.
11) **Knife**. This was used for cutting or harvesting matured lettuce plants.

Research Design

The study was experimental research that employed Randomized Complete Block Design (RCBD). It was a type of experimental design characterized by blocks and all treatments were randomly assigned in each block (Gomez and Gomez, 1984). Five treatments were set in this experiment. This was replicated three (3) times in order to ensure precision or accuracy of collected data.

Experimental Layout

This experiment considered the layout suitable for a randomized complete block design. The whole experimental area (65 sq. m.) was divided into 3 blocks or replications with 0.5 meter alleyway between blocks. Each block was again divided into 5 plots with 0.5 meter distance. Plots measured 1 meter x 1.5 meter. Plants were spaced at 20 cm between rows and 20 cm between hills. Each row comprised 10 plants or a total of 50 plants/plot.

Randomization of Treatments

The five (5) treatments of this study were randomly assigned in each block using table of random number. This started by randomly choosing 5 sets of random number published in the book of Gomez and Gomez (1984). The three (3) innermost numbers were used and its sequence was noted to represent the plot number or assignment. Then, the sets of random number were ranked from lowest to highest, such that the lowest number was assigned to treatment 1, second to treatment 2, third to treatment 3, fourth to treatment 4 and the highest number to treatment 5. The same procedure was observed in the random distribution of treatments to replications 2 and 3.

4. RESULTS AND DISCUSSION

Plant Height of Lettuce

The height of lettuce plants was taken every ten (10) days from the time of transplanting until harvest. The following data were recorded.

Plant Height (10 days from transplanting).

Ten (10) days from transplanting, the highest mean was observed in T1, the plots applied with 100% chicken manure with an average plant height of 7.77 cm, followed by T4 with 7.69 cm, then T3 with an average height of 7.57 cm, T2 with 7.48 cm, T5 with 7.37 cm and T0 with 6.35 cm. Results of the analysis of variance has generated an F value equivalent to 5.95 which is greater than the tabular F value of 5.64 at 1% level of significance. It is deduced that plant height of lettuce was significantly affected to variations in the fertilizers applied to the plant. The null hypothesis stating no significant difference in the height of lettuce due to variations in the quantity of chicken manure and compost is rejected.

Further test using the Least Significant Difference (LSD) indicated that T5, plants receiving 100% compost was significantly higher than the complete check at 5% level of significance. While the other plots receiving certain proportions of chicken manure and compost were significantly higher than the control at 1% level of significance. This indicates that as early as 10 days the combined effects of chicken manure and compost was evident on the growth of the plant. It is worthy to note that the F value for replication was 0.13 which was not significant indicative that experimental error within blocks was minimized while the variations between blocks were maximized. This means that plots receiving similar treatment across the three replications where more or less the same. Lastly, the coefficient of variations (cv) computed for this parameter was 5.59% which denoted that the accuracy or precision of data gathered was assured since it was within the acceptable values.

Plant Height (20 days from transplanting).
For the second time, plant height was taken after 20 days from transplanting. It was the T4 that got the highest mean value of 12.62 cm, followed by T1 with an average height of 11.73 cm, then T5 with 11.70 cm, T3 with 11.30 cm, T2 with 11.23 cm and finally T0 with 8.43 cm. The computation of the analysis of variance has resulted an F value of 13.77 which is greater than the tabular value at the 1% level of significance, which means a highly significant result. Likewise, all the treatment means had highly significant deviations from the control using LSD (.01) value of 1.92904. The treatment means other than the control was comparable. This result is suggesting that plots with 100% compost and other treatment combinations have comparable results with those plants receiving 100% chicken manure. Hence, this leads to the rejection of the null hypothesis implying that at 20 days from planting the varying amount of chicken manure and compost significantly vary from the control. The F value of 0.63 for replication was not significant and indicative that experimental errors within blocks were minimized while the variations between blocks were maximized. The coefficient of variations (cv) computed from this study was 6.67% which means that the precision and accuracy of gathered data was within the acceptable values for fertilizer trials.

Plant Height (30 days from transplanting).
At 30 days from transplanting is the harvesting period. This is also the third time where plant height was measured. The data shows that the highest mean was observed in T4 with a mean value of 18.52 cm, these are the plants receiving 25% chicken manure and 75% compost. Similar result was also noted on T5 with 18.52 cm and these comprised the plants applied with 100% compost. These were followed by T3 with a mean height of 18.35 cm, then T1 with mean value of 17.60 cm, T2 with a mean value of 17.10 cm and T0 with a mean height of 14.55 cm. A significant difference was observed when the analysis of variance was determined; it generated an F value of 7.77 which is greater than the tabular value at the 1% level of significance and is interpreted as "highly significant" which means that the height of Lettuce was affected due to the application of chicken manure and compost. Hence, the null hypothesis is rejected implying that significant differences were detected 30 days from transplanting or at harvest time. Further test using the Least Significant Difference (LSD) at 1% showed that T1, T2, T3, T4 and T5 were significantly different from T0. It can also be gleaned that treatment means other than the control was statistically equal or comparable. With regards to the F value for replication, a value of 0.54 was not significant. Again, this is indicative that experimental errors within blocks were minimized while the variations between blocks were maximized. Similarly, the coefficient of variations (cv) computed was 5.92% which can be interpreted that the precision of gathered data was within the acceptable values for fertilizer trials.

Width of Leaves (10 days from transplanting).
The width of leaves was also measured 10 days from transplanting. The highest mean was observed in T5 with 4.83 cm, followed by T4 with a mean width of 4.68 cm, T3 with 4.50 cm, T1 with 4.37 cm, T2 with 4.30 cm and T0 with 4.27 cm. In this parameter, the computed F value was 3.29 which is lesser than the tabular F value of 3.33 at 5% level of significance. This suggests that the treatment means being compared were statistically equal or comparable. It can be deduced that even those plots which served as complete check produced a comparable result when it comes to the width of leaves. Thus, the null hypothesis stating no significant difference in the width of leaves of Lettuce due to variations in the quantity of chicken manure and compost is rejected. The F value for replication was likewise calculated and it has generated a value of 1.37 which is lower than the 4.10 at 5% level of significance. This explains that experimental error within blocks were minimized while the variations between blocks were maximized. Further the coefficient of variations (cv) computed from this study was 5.38% which denoted the precision of data gathered since it is within the acceptable values.

Width of Leaves (20 days from transplanting).
After 20 days from transplanting the highest mean was observed in T4 with a mean value of 9.45 cm, followed by T3 with an average width of 9.43 cm, then T5 with mean score of 9.40 cm, T2 with a mean value of 9.28 cm, T1 with 9.27 and T0 with a mean height of 7.38 cm. The computed F is 8.21 which is greater than 5.64 at 1% level of significance indications a highly significant difference in the width of leaves 20 days from transplanting. Thus, the null hypothesis is rejected implying that at 20 days from planting, plants receiving the chicken manure and compost significantly deviate from that of the control using LSD (.01) = 1.42. It is likewise noted that treatment means other than the control are statistically comparable. Here, the F value for replication was 1.63 which means not significant and is indicative that experimental errors within blocks were minimized while the variations between blocks were maximized. Further, the coefficient of variations (cv) computed from this study was 6.08% suggestive that the precision of gathered data was within the acceptable values for fertilizer trials.

Width of Leaves (30 days from transplanting).
Prior to harvesting or 30 days from transplanting the last measurement on the width of leaves was taken. The highest mean was observed in T1 with a mean value of 17.55 cm, next is T4 with an average width of 14.47 cm, then T3 with mean value of 14.40 cm, T2 with a mean value of 14.28 cm and T5 with a mean width of 12.40 cm and T0 with a mean width of 10.25 cm. The treatment difference was analyzed using the analysis of variance results and resulted in an F value of 44.30 which is greater than the tabular value at the 1% level of significance which is interpreted as highly significant, thus the width of leaves of Lettuce were greatly affected due to varying levels of chicken manure and compost. Hence, the null hypothesis is rejected implying that significant differences were detected 30 days from transplanting or at harvest time. Further test using the Least Significant Difference (LSD) at 1% showed that T1, T2, T3 and T4 and T5 significantly deviated from T0. It was noted that the F value of 0.95 for replication was not significant but indicative that experimental errors within blocks were minimized while the variations between blocks were maximized. Further, the coefficient of variations (cv) computed from this study was 5.10% which indicated that the precision of gathered data was within the acceptable values for fertilizer trials.

Length of Leaves (10 days from transplanting).
On the length of leaves 10 days from transplanting, the highest mean was observed in T1 with 7.68 cm, followed by T4 with a mean length of 7.28 cm, T3 with 6.77 cm, T5 with 6.70 cm, T2 with 6.47 and T0 with 6.20 cm. These mean values were subjected to analysis of variance which has resulted in an F value of 2.39 which is lesser than the tabular F value of 3.33 at 5% level of significance. This means that the treatment means being compared were equal or comparable. It can be deduced that after 10 days from transplanting the length of the leaves of lettuce were statistically equal or comparable regardless of the quantity of chicken manure and compost applied. Thus, the null hypothesis stating no significant difference in the length of leaves of Lettuce due to variations in the quantity of chicken manure and compost could not be rejected. It was further noted that the F value of 0.06 for replication was not significant and indicative that experimental error within blocks were minimized while the variations between blocks were maximized. Further, the coefficient of variations (cv) computed from this study was 9.94% which denoted the precision of data gathered since it is within the acceptable values.

Length of Leaves (20 days from transplanting).
Twenty (20) days from transplanting the highest mean was observed in T1 with a mean value of 12.53 cm, followed by T4 with an average measurement of 11.20 cm, then T5 with mean score of 10.47 cm, T2 with a mean value of 10.45, T3 with 10.42 cm and T0 with a mean length of 9.28 cm. When the analysis of variance was computed, an F value equivalent to 14.23 was generated which is which is higher than the tabular value at the 1% level of significance interpreted as "highly significant" where deviations in the length of leaves of lettuce was notable due to the application of chicken manure and compost. Hence, the null hypothesis is rejected implying that at 20 days from planting the varying amount of chicken manure and compost caused significant differences in the length of leaves of lettuce. The F value of 1.46 for replication was not significant but indicative that experimental errors within blocks were minimized while the variations between blocks were maximized. Further, the coefficient of variations (cv) computed from this study was 5.16% suggestive that the precision of gathered data was within the acceptable values for fertilizer trials.

Length of Leaves (30 days from transplanting).
Prior to harvesting or 30 days from transplanting the last measurement on the length of leaves was taken. The highest mean was observed in T3 with a mean value of 17.33 cm, T4 with a mean value of 17.20, next is T1 with an average length of 17.12 cm, then T2 with mean value of 16.98 cm, T5 with a mean value of 16.93 cm and T0 with a mean value of 13.05 cm. The treatment difference was analyzed using the analysis of variance results that resulted to an F value of 8.81 which is greater than the tabular value at the 1% level of significance which is interpreted as highly significant, thus the length of leaves of lettuce were greatly affected due to varying levels of chicken manure and compost. Hence, the null hypothesis is rejected implying that significant differences were detected 30 days from transplanting or at harvest time. Further test using the Least Significant Difference (LSD) at 1% showed that T1, T2, T3, T4 and T5 significantly deviated from T0. The F value of 0.57 for replication was not significant, which is indicative that experimental errors within blocks were minimized while the variations between blocks were maximized. Further, the coefficient of variations (cv) computed from this study was 5.41% indicative that the precision of gathered data was within the acceptable values for fertilizer trials.

Number of Leaves (10 days from transplanting).
With regards to the number of leaves 10 days from transplanting, the highest mean was observed in T1 with 5.33, followed by T4 with a mean value of 5.00, T5 with 4.97, T2 with 4.80 and T3 with 4.77 and T0 with a mean value of 4.63. When these mean values were subjected to analysis of variance, this has resulted in an F value of 2.38 which is lesser than the tabular F value of 3.33 at 5% level of significance. This means that the treatment means being compared were equal or comparable. It can be deduced that after 10 days from transplanting, the length of the leaves of lettuce were statistically equal or comparable regardless of the quantity of chicken manure and compost applied. Thus, the null hypothesis stating no significant difference in the number of leaves of lettuce due to variations in the quantity of chicken manure and compost could not be rejected. It was further noted that the F value of 0.92 for replication was not significant but indicative that experimental error within blocks were minimized while the variations between blocks were maximized. Similarly, the coefficient of variations (cv) computed from this study was 5.86% which denoted the precision of data gathered since it was within the acceptable values.

Number of Leaves (20 days from transplanting).
After 20 days from transplanting the highest mean was observed in T1 with a mean value of 7.03, followed by T4 with an average number of 7.00, then T5 with mean score of 6.77, T3 with a mean value of 6.70, T2 with mean value of 6.63 and T0 with a mean value of 6.40. When the analysis of variance was computed, an F value equivalent to 1.77 which is lower than the tabular value at the 5% level of significance was realized which is indicative of a not significant difference in the number of leaves of Lettuce due to varying levels of chicken manure and compost. Hence, the null hypothesis is accepted implying that at 20 days from planting the varying amount of chicken manure and compost did not cause significant differences in the number of leaves of Lettuce. The F value for replication of 0.78 was not significant and is suggesting that experimental errors within blocks were minimized while the variations between blocks were maximized. Likewise, the coefficient of variations (cv) computed from this study was 5.11% implying that the precision of gathered data was within the acceptable values for fertilizer trials.

Number of Leaves (30 days from transplanting).
After 30 days from transplanting the highest mean was observed in T1 with a mean value of 12.63, followed by T2 with a mean value of 12.33, T5 with an average number of 12.27, then T4 with mean score of 12.03, then T3 with a mean value of 11.40 and finally T0 with an average number of leaves of 8.50. When the analysis of variance was computed, an F value equivalent to 4.36 was generated, which is greater than the tabular value at the 5% but lower than the 1% level of significance, thus it is interpreted as "significant". This means that somehow the number of leaves of lettuce plants was affected with the application of chicken manure and compost. Hence, the null hypothesis is rejected. Using the LSD values as basis for comparison with the control, it was established that T3 and T4 was significantly higher than the control at 5% level of significance while T1, T2 and T5 were significantly different from the control at 1% level of significance. The F value of 1.45 for replication was not significant, which means that the experimental errors within blocks were minimized while the variations between blocks were maximized. Further, the coefficient of variations (cv) computed from this study was 8.38% suggestive that the precision of gathered data was within the acceptable values for fertilizer trials.

Yield of Lettuce Plants
Harvesting of Lettuce was made on the 30th day from transplanting, the yield of Lettuce was measured using a weighing scale. It was observed that the highest mean was observed in T1 with a mean value of 94.17 grams, next is T5 with an average yield of 92.67 grams, then T4 with mean value of 83.17 grams, T3 with a mean value of 80.33 grams, T2 with 80.00 grams and T0 with a mean value of 64.00 grams. The treatment difference was analyzed using the analysis of variance that resulted an F value of 22.87 which is greater than the tabular value of 5.64 at the 1% level of significance and therefore interpreted as "highly significant", thus the yield of lettuce was affected due to the application of chicken manure and compost. Hence, the null hypothesis is rejected implying that significant differences were recorded in the yield of Lettuce at harvest time. Further test using the Least Significant Difference (LSD) at 1% showed that T1, T2, T3, T4 and T5 significantly deviated from T0. The F value of 0.79 for replication was not significant and indicative that experimental errors within blocks were minimized while the variations between blocks were maximized. Further, the coefficient of variations (cv) computed from this study was 5.26% which indicated that the precision of gathered data was within the acceptable values for fertilizer trials.

5. CONCLUSION

Based from the findings of the study, the following conclusions are herein formulated, that is: 1). The application of chicken manure and compost prepared by ESSU Salcedo was proven effective in enhancing the yield of lettuce. 2). Applying the compost alone showed a comparable result with that of 100% chicken manure. It can be deduced that nutrient-supplying capacity of the compost prepared by ESSU Salcedo is similar to that of chicken manure. 3). Further, it was noted that plants applied with compost can resist even intense temperature as manifested during the experimental period, this can be attributed to the ability of the compost to absorb and retain moisture thereby maintaining the water requirements needed by the plants for a longer period within a day.

RECOMMENDATIONS

The findings of the study lead to the formulation of the following recommendations:

1) The yield of lettuce with 100% compost is comparable to that of 100% chicken manure. Therefore, in the absence of chicken manure and is currently very expensive, compost may be used by farmers and other individuals who are engaged in lettuce farming.
2) For soil type similar to that of Tacloban National Agricultural Schools, the need to apply for fertilizers, preferably organic ones are a must because this would increase the yield of lettuce.
3) The researcher is likewise suggesting to use protective structure whenever lettuce production is done during warm months (April to July) because the intense heat of the sun is damaging to the leaves of the plant.
4) Similar studies maybe conducted in other areas with different agro-climatic conditions to validate the findings of this study.

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AUTHOR'S CONTRIBUTIONS

The author discussed the results and contributed to from the start to final manuscript.

CONFLICT OF INTEREST

The author declare that he has no competing interests.

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